



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2023-0841; Special Conditions No. 25-837-SC]

Special Conditions: Airbus SAS Model A320 and A321 Series Airplanes;

Rechargeable Lithium Batteries and Battery System Installations

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Airbus SAS (Airbus) Model A320-251N, -252N, -253N, -271N, -272N, and -273N; and Model A321-251NX, -252NX, -253NX, -271NX, and -272NX airplanes. These airplanes will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport-category airplanes. This design feature is a mini emergency power supply unit containing rechargeable lithium-ion batteries. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: This action is effective on Airbus on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Send comments on or before [INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Send comments identified by Docket No. FAA-2023-0841 using any of the following methods:

- *Federal eRegulations Portal:* Go to <https://www.regulations.gov/> and follow the online instructions for sending your comments electronically.

- *Mail:* Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202-493-2251.
- *Privacy:* Except for Confidential Business Information as described in the following paragraph, and other information as described in title 14, Code of Federal Regulations (14 CFR) 11.35, the FAA will post all comments received without change to <https://www.regulations.gov/>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about these special conditions.
- *Confidential Business Information:* Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to these special conditions contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to these special conditions, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and the indicated comments will not be placed in the public docket of these special conditions. Send submissions containing CBI to the individual listed in the For Further Information Contact section. Comments the

FAA receives, which are not specifically designated as CBI, will be placed in the public docket for these special conditions.

Docket: Background documents or comments received may be read at <https://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Nazih Khaouly, Aircraft Systems, AIR-623, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration, 2200 South 216th Street, Des Moines, Washington 98198; telephone (206) 231-3160; email Nazih.khaouly@faa.gov.

SUPPLEMENTARY INFORMATION: The substance of these special conditions has been published in the Federal Register for public comment in several prior instances with no substantive comments received. Therefore, the FAA finds, pursuant to 14 CFR 11.38(b), that new comments are unlikely, and notice and comment prior to this publication are unnecessary.

Comments Invited

The FAA invites interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

The FAA will consider all comments received by the closing date for comments, and will consider comments filed late if it is possible to do so without incurring delay. The FAA may change these special conditions based on the comments received.

Background

On August 17, 2022, Airbus SAS applied for a change to Type Certificate No. A28NM to install a mini emergency power supply unit containing rechargeable, lithium-ion batteries and battery system on Airbus A320-251N, -252N, -253N, -271N, -272N, and -273N and Airbus Model A321-251NX, -252NX, -253NX, -271NX, and -272NX airplanes.

These airplanes, approved under Type Certificate No. A28NM, are twin-engine transport category airplanes with a maximum seating of capacity between 179 to 244 passengers and a maximum takeoff weight between 154,322 to 213,848 pounds, depending on model.

Type Certification Basis

Under the provisions of title 14, Code of Federal Regulations (14 CFR) 21.101, Airbus must show that changes to the Airbus Model A320-251N, -252N, -253N, -271N, -272N, and -273N and Airbus Model A321-251NX, -252NX, -253NX, -271NX, and -272NX airplanes, as changed, continues to meet the applicable provisions of the regulations listed in Type Certificate No. A28NM or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (e.g., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Airbus Model A320-251N, -252N, -253N, -271N, -272N, and -273N, and Airbus Model A321-251NX, -252NX, -253NX, -271NX, and -272NX airplanes because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, or should any other model

already included on the same type certificate be modified to incorporate the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Airbus Model A320-251N, -252N, -253N, -271N, -272N, and -273N, and Airbus Model A321-251NX, -252NX, -253NX, -271NX, and -272NX airplanes must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.101.

Novel or Unusual Design Features

The Airbus Model A320-251N, -252N, -253N, -271N, -272N, and -273N; and Model A321-251NX, -252NX, -253NX, -271NX, and -272NX airplanes will incorporate the following novel or unusual design feature Mini Emergency Power Supply Unit containing rechargeable lithium-ion batteries.

Discussion

Rechargeable lithium batteries and battery systems are considered to be a novel or unusual design feature in transport category airplanes, with respect to the requirements in § 25.1353. This type of battery has certain failure, operational, and maintenance characteristics that differ significantly from those of the nickel-cadmium and lead-acid rechargeable batteries currently approved for installation on transport category airplanes. These batteries and battery systems introduce higher energy levels into airplane systems through new chemical compositions in various battery-cell sizes and construction. Interconnection of these cells in battery packs introduces failure modes that require unique design considerations, such as provisions for thermal management.

Special Condition 1 requires that each individual cell within a battery and battery system be designed to maintain safe temperatures and pressures. Special Condition 2 addresses these same issues but for the entire battery system.

Special Condition 2 requires that the batteries and battery system be designed to prevent propagation of a thermal event, such as self-sustained, uncontrolled increases in temperature or pressure from one cell to adjacent cells.

Special Conditions 1 and 2 are intended to ensure that the cells and battery system are designed to eliminate the potential for uncontrollable failures. However, a certain number of failures will occur due to various factors beyond the control of the designer. Therefore, other special conditions are intended to protect the airplane and its occupants if failure occurs.

Special Conditions 3, 7, and 8 are self-explanatory.

Special Condition 4 clarifies that the flammable-fluid fire-protection requirements of § 25.863 apply to rechargeable lithium battery installations. Section 25.863 is applicable to areas of the airplane that could be exposed to flammable fluid leakage from airplane systems. Rechargeable lithium batteries contain electrolyte that is a flammable fluid.

Special Condition 5 requires each rechargeable lithium battery and battery system installation to not damage surrounding structure or adjacent systems, equipment, or electrical wiring from corrosive fluids or gases that may escape in such a way as to cause a major or more severe failure condition.

Special Condition 6 requires each rechargeable lithium battery and battery system installation to have provisions to prevent any hazardous effect on airplane structure or systems caused by the maximum amount of heat it can generate due to any failure of it or its individual cells. The means of meeting special conditions 5 and 6 may be the same,

but they are independent requirements addressing different hazards. Special Condition 5 addresses corrosive fluids and gases, whereas special condition 6 addresses heat.

Special Condition 9 requires rechargeable lithium batteries and battery systems to have “automatic” means, for charge rate and disconnect, due to the fast acting nature of lithium battery chemical reactions. Manual intervention would not be timely or effective in mitigating the hazards associated with these batteries.

These special conditions apply to all rechargeable lithium batteries and battery system installations in lieu of § 25.1353(b)(1) through (4) at amendment 25-123, or § 25.1353(c)(1) through (4) at earlier amendments. Those regulations will remain in effect for other battery installations on these airplanes.

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Airbus Model A320-251N, -252N, -253N, -271N, -272N, and -273N; and Model A321-251NX, -252NX, -253NX, -271NX, and -272NX airplanes. Should Airbus apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on Airbus Model A320-251N, -252N, -253N, -271N, -272N, and -273N; and Model A321-251NX, -252NX, -253NX, -271NX, and -272NX airplanes. It is not a rule of general applicability.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

Authority Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701, 44702, and 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Airbus Model A320-251N, -252N, -253N, -271N, -272N and -273N; and Model A321-251NX, -252NX, -253NX, -271NX and -272NX airplanes.

Rechargeable Lithium Battery and Battery System Installations

In lieu of § 25.1353(b)(1) through (4) at amendment 25-123, or § 25.1353(c)(1) through (4) at earlier amendments, each rechargeable lithium battery installation must:

1. Be designed to maintain safe cell temperatures and pressures under all foreseeable operating conditions to prevent fire and explosion.
2. Be designed to prevent the occurrence of self-sustaining, uncontrollable increases in temperature or pressure, and automatically control the charge rate of each cell to protect against adverse operating conditions, such as cell imbalance, back charging, overcharging, and overheating.
3. Not emit explosive or toxic gases, either in normal operation or as a result of its failure that may accumulate in hazardous quantities within the airplane.
4. Meet the requirements of § 25.863.
5. Not damage surrounding structure or adjacent systems, equipment, or electrical wiring from corrosive fluids or gases that may escape in such a way as to cause a major or more- severe failure condition.

6. Have provisions to prevent any hazardous effect on airplane structure or systems caused by the maximum amount of heat it can generate due to any failure of it or its individual cells.

7. Have a failure sensing and warning system to alert the flightcrew if its failure affects safe operation of the airplane.

8. Have a monitoring and warning feature that alerts the flightcrew when its charge state falls below acceptable levels if its function is required for safe operation of the airplane.

9. Have a means to automatically disconnect from its charging source in the event of an over-temperature condition, cell failure or battery failure.

Note: A battery system consists of the battery, battery charger and any protective, monitoring and alerting circuitry or hardware inside or outside of the battery. It also includes vents (where necessary) and packaging. For the purpose of these special conditions, a battery and the battery system is referred to as a battery.

Issued in Des Moines, Washington, on June 4, 2023.

Suzanne A. Masterson,
Acting Manager, Technical Policy Branch,
Policy and Standards Division,
Aircraft Certification Service.

[FR Doc. 2023-12278 Filed: 6/7/2023 8:45 am; Publication Date: 6/8/2023]